XM-440EX/440NX

SERVICE MANUAL

Canadian Model
AEP Model
E Model
XM-440EX
UK Model
XM-440NX

Photo : XM-440EX

SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION
40 watts per channel minimum continuous average power into 4 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.04% total harmonic distortion per Car Audio Ad Hoc Committee standards.

Other Specifications

Circuit system	OTL (output transformerless) circuit Pulse power supply
Inputs	RCA pin jacks High level input connector
Outputs	Speaker terminals
Speaker impedance	2 – 8 Ω (stereo) 4 – 8 Ω (when used as a bridging amplifier)
Maximum outputs	Four speakers: 80 W × 4 (at 4 Ω) 100 W × 4 (at 2 Ω) Two speakers: 200 W × 2 (at 4 Ω, when used as a bridging amplifier)
Rated outputs (supply voltage at 14.4 V)	Four speakers: 40 W × 4 (20 Hz – 20 kHz, 0.04 % THD, at 4 Ω) 50 W × 4 (20 Hz – 20 kHz, 0.1 % THD, at 2 Ω) Two speakers: 100 W × 2 (20 Hz – 20 kHz, 0.1 % THD, at 4 Ω)
Frequency response	5 Hz – 100 kHz ($^{+0}_{-3}$ dB),
Harmonic distortion	0.005 % or less (at 1kHz, 4 Ω)
Input level adjustment range	0.2 – 4.0 V (RCA pin jacks) 0.4 – 8.0 V (High level input)
High-pass filter	50 – 200 Hz, –12 dB/oct
Low-pass filter	50 – 200 Hz, –12 dB/oct
Power requirements	12 V DC car battery (negative ground)
Power supply voltage	10.5 – 16 V
Current drain	at rated output: 24 A Remote input: 1.4 mA
Dimensions	Approx. 237 × 52 × 214 mm (w/h/d) ($9\ ^3/_8 \times 2\ ^1/_8 \times 8\ ^1/_2$ in.) not incl. projecting parts and controls
Mass	Approx. 1.9 kg (4 lb. 3 oz.) not incl. accessories
Supplied accessories	Mounting screws (4), Terminal cap (1)

Design and specifications are subject to change without notice.

STEREO POWER AMPLIFIER

MICROFILM

SONY®

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SECTION 1
GENERAL

This section is extracted from instruction manual.

Features

- Maximum power output of 80 watts per channel (at 4 ohms).
- This unit can be used as a bridging amplifier with a maximum output of 200 watts.
- Direct connection can be made with the speaker outputs of your car audio if it is not equipped with the line output (High level input connection).
- Built-in variable LPF (Low-pass filter) and HPF (High-pass filter).
- Protection circuit and indicator provided.
- Pulse power supply* for stable, regulated output power.

Pulse power supply
This unit has a built-in power regulator which converts the power supplied by the DC 12 V car battery into high speed pulses using a semiconductor switch. These pulses are stepped up by the built-in pulse transformer and separated into both positive and negative power supplies before being converted into direct current again. This is to regulate fluctuating voltage from the car battery. This light weight power supply system provides a highly efficient power supply with a low impedance output.

Caractéristiques

- Puissance de sortie maximale de 80 watts par canal (à 4 ohms).
- Cet appareil peut être utilisé comme amplificateur de pontage d'une sortie maximale de 200 watts.
- Une connexion directe est possible avec la sortie haut-parleur de votre autoradio si celle-ci n'est pas équipée d'une sortie de ligne (connexion d'entrée haut niveau).
- Filtre passe-bas (LPF) et filtre passe-haut (HPF) variables intégrés.
- Avec circuit et indicateur de protection.
- Alimentation électrique par impulsions* pour une puissance de sortie stable, régulée.

Alimentation électrique par impulsions
Cet appareil est équipé d'un régulateur de puissance intégré qui convertit la puissance fournie par une batterie de voiture de 12 V CC en impulsions ultra-rapides au moyen d'un commutateur à semi-conducteur. Ces impulsions sont amplifiées par le transformateur d'impulsions intégré et séparées en alimentation positive et négative avant d'être reconverties en courant continu. Ce processus permet de compenser les fluctuations de tension provenant de la batterie de la voiture. Ce système d'alimentation de faible poids assure une alimentation électrique très efficace pour une sortie d'impédance faible.

Location and Function of Controls

1 POWER/PROTECTOR indicator
- OFFSET lights up in green during normal operation. The color will change from green to red when the voltage going out to the speaker terminal or the pin Jack is too high.
- THERMAL lights up in green during normal operation. The color will change from green to red when the temperature rises to an unsafe level. The color will return to green when the temperature returns to normal.
- OVER CURRENT lights up in green during normal operation. The color will change from green to red when receiving a powerful signal.

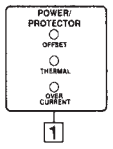
2 Cut-off frequency adjustment control (FRONT/REAR)
Sets the cut-off frequency (50–200 Hz) for the low-pass or high-pass filters.

3 FILTER selector switch (FRONT/REAR)
When the switch is in the LPF position, the filter is set to low-pass. When in the HPF position, the filter is set to high-pass.

4 LEVEL adjustment control (FRONT/REAR)
The input level can be adjusted with this control when using source equipment made by other manufacturers. Turn it to MAX when the output level of the car audio seems low.

5 TEST TONE button
To check the system's status, activate the built-in transmitter then press the TEST TONE button. If the tone is heard, the unit is functioning normally.

(right side/côté droit)



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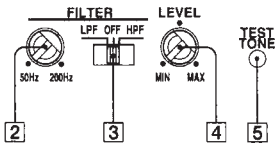


Emplacement et fonction des commandes

1 Indicateur POWER/PROTECTOR
- OFFSET s'allume en vert en cours de fonctionnement normal. La couleur passe du vert au rouge lorsque la tension transmise via la borne de haut-parleur ou la prise Pin est trop élevée.
- THERMAL s'allume en vert en cours de fonctionnement normal. La couleur passe du vert au rouge lorsque la température dépasse le niveau de sécurité. La couleur repasse au vert dès que la température est revenue à un niveau normal.
- OVER CURRENT s'allume en vert en cours de fonctionnement normal. La couleur passe du vert au rouge lors de la réception d'un signal puissant.

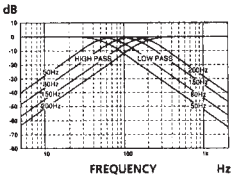
2 Commandes de réglage de la fréquence de coupure (FRONT/REAR)
Règle la fréquence de coupure (50 – 200 Hz) des filtres passe-bas ou passe-haut.

3 Sélecteur FILTER (FRONT/REAR)
Lorsque le commutateur est en position LPF, le filtre est mis sur passe-bas. Lorsqu'il est en position HPF, le filtre est mis sur passe-haut.

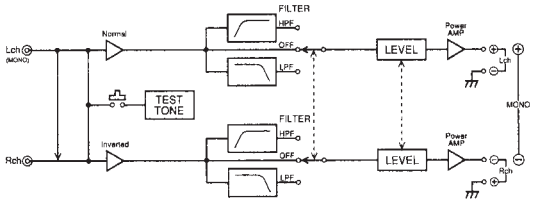
4 Commande de réglage LEVEL (FRONT/REAR)
Le niveau d'entrée peut se régler avec cette commande lors de l'utilisation d'équipements source d'autres fabricants. Mettez-le sur MAX lorsque le niveau de sortie de l'installation audio paraît faible.

5 Touche TEST TONE
Pour contrôler le statut du système, activez le transmetteur intégré et appuyez ensuite sur la touche TEST TONE. Si vous entendez une tonalité, c'est que l'appareil fonctionne normalement.

Cut-off frequency/Fréquence de coupure



Circuit Diagram/Schéma du circuit

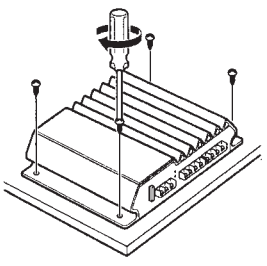


Installation

Before Installation
- Mount the unit either inside the trunk or under a seat.
- Choose the mounting location carefully so the unit will not interfere with the normal movements of the driver, and where it will not be exposed to direct sunlight or hot air from the heater.
- Do not install the unit under the floor carpet, where the heat dissipation from the unit will be considerably impaired.

First, place the unit where you plan to install it, and mark the positions of the four screw holes on the surface of the mounting board (not supplied). Then drill the holes approximately 3 millimeters (mm) in diameter and mount the unit onto the board with the supplied mounting screws. The supplied mounting screws are 15 mm long. Therefore, make sure that the mounting board is thicker than 15 mm.

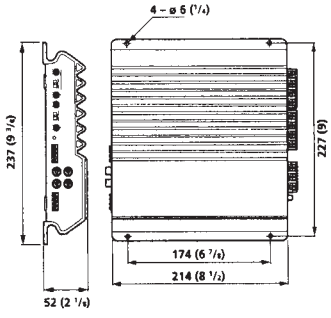
Unit : mm (in.)
Unité: mm (po.)



Installation

Avant l'installation
- Installez l'appareil dans le coffre ou sous un siège.
- Choisissez soigneusement l'emplacement de montage afin d'éviter que l'appareil ne gêne les mouvements normaux du conducteur et qu'il ne soit pas exposé au rayonnement direct du soleil ni aux conduits d'air chaud du chauffage.
- N'installez pas l'appareil sous le tapis de sol car la dissipation thermique ne pourrait pas se faire correctement.

Présentez d'abord l'appareil à l'endroit où vous voulez l'installer et tracez un repère de positionnement pour les quatre vis sur la surface de la plaque de montage (non fournie). Percez des trous d'environ 3 millimètres (mm) de diamètre, puis fixez l'appareil sur la plaque à l'aide des vis fournies. Celles-ci font 15 mm de long; vérifiez, par conséquent, que la plaque fait au moins 15 mm d'épaisseur.



Connections

Precautions

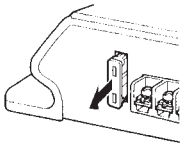
- This unit is designed for negative ground 12 V DC operation only.
- Use speakers with suitable impedance (2 – 8 ohms).
- Do not connect any active speakers (with built-in amplifiers) to the speaker terminals of the unit. Doing so may damage the active speakers.
- Avoid installing the unit in areas subject to:
  - — high temperatures such as from direct sunlight or hot air from the heater
  - — rain or moisture
  - — dust or dirt.
- If your car is parked in direct sunlight and there is a considerable rise in temperature inside the car, allow the unit to cool down before use.
- When installing the unit horizontally, be sure not to cover the fins with the floor carpet, etc.
- If this unit is placed too close to the car radio, interference may occur. In this case, relocate the amplifier away from the car radio.
- If no power is being supplied to the master unit, check the connections.
- This power amplifier employs a protection circuit* to protect the transistors and speakers if the amplifier malfunctions. Do not attempt to test the protection circuits by covering the heat sink or connecting improper loads.
- Do not use the unit on a weak battery as its optimum performance depends on a good power supply.
- For safety reasons, keep your car audio volume moderate so that you can still hear sounds outside your car.

Fuse Replacement

If the fuse blows, check the power connection and replace the fuse. If the fuse blows again after replacement, there may be an internal malfunction. In such a case, consult your nearest Sony dealer.

Warning

When replacing the fuse, be sure to use one matching the amperage stated above the fuse holder. Never use a fuse with an amperage rating exceeding the one supplied with the unit as this could damage the unit.



Protection circuit
This amplifier is provided with a protection circuit that activates in the following cases:
— when the unit is overheated
— when a DC current is generated
— when the speaker terminals are short-circuited.
The color of the POWER/PROTECTOR indicator will change from green to red, and the unit will shut down. If this happens, turn off the connected equipment, take out the cassette tape or disc, and determine the cause of the malfunction. If the amplifier has overheated, wait until the unit cools down before using again.

If you have any questions or problems concerning your unit that are not covered in this manual, please consult your nearest Sony dealer.

Connexions

Précautions

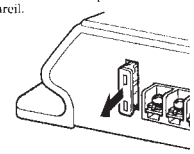
- Cet appareil est conçu pour fonctionner uniquement sur courant continu de 12 volts avec masse négative.
- Utilisez des haut-parleurs d'une impédance appropriée (2 - 8 ohms).
- Ne raccordez pas de haut-parleurs actifs (avec amplificateur intégré) aux bornes de haut-parleurs de cet appareil; ils pourraient être endommagés.
- N'installez pas l'appareil dans des endroits soumis:
  - — à des températures élevées, comme en plein soleil ou près de la sortie d'air chaud du chauffage;
  - — à l'humidité ou à la pluie;
  - — à la poussière ou à la saleté.
- Si votre voiture était garée en plein soleil et que la température a considérablement augmenté à l'intérieur, laissez refroidir l'appareil avant de l'utiliser.
- Si vous installez l'appareil à l'horizontale, ne recouvrez pas les ailettes de ventilation par le tapis de sol ou autre chose.
- Si cet appareil est placé trop près de l'autoradio, des interférences risquent de se produire. Eloignez autant que possible l'amplificateur de l'autoradio.
- Si l'appareil principal n'est pas alimenté, vérifiez les connexions.
- Cet amplificateur est équipé d'un circuit* destiné à protéger les transistors et les haut-parleurs en cas de défaillance. N'essayez pas de tester l'efficacité de ce circuit en recouvrant les dissipateurs thermiques ou en effectuant des connexions inadéquates.
- N'utilisez pas l'appareil sur une batterie faible, car sa performance maximale dépend d'une bonne alimentation en électricité.
- Pour des raisons de sécurité, écoutez l'autoradio à un volume modéré afin d'entendre les bruits extérieurs.

Remplacement du fusible

Si le fusible grille, vérifiez les connexions du fil d'alimentation et remplacez le fusible. S'il grille de nouveau, un mauvais circuit interne peut en être la cause. Dans ce cas, consultez votre concessionnaire Sony.

Avertissement

En cas de remplacement du fusible, veillez à utiliser un fusible dont l'intensité correspond à celle inscrite sur le porte-fusible. N'utilisez jamais de fusible dont l'intensité dépasse celle du fusible fourni avec l'appareil, car vous risqueriez d'endommager l'appareil.



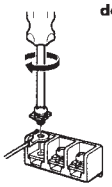
** Circuit de protection*
Cet amplificateur est équipé d'un circuit de protection qui s'active dans les cas suivants:
— Surchauffe de l'appareil
— Production d'un courant continu
— Court-circuit aux bornes des haut-parleurs.
La couleur du témoin POWER/PROTECTOR passe du vert au rouge et l'appareil s'éteint.
Si le cas se présente, coupez l'alimentation de l'appareil raccordé et éjectez la cassette ou le disque compact avant d'examiner la cause de la défaillance. Si l'amplificateur est trop chaud, attendez que l'appareil refroidisse avant de le réutiliser.

Pour toute question ou problème qui ne serait pas traité dans ce manuel, consultez votre concessionnaire Sony.

Caution

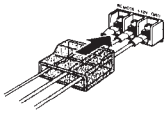
- Before making any connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Be sure to use speakers with an adequate power rating. If you use small capacity speakers, they may be damaged.
- Do not connect the ⊖ terminal of the speaker system to the car chassis, and do not connect the ⊖ terminal of the right speaker with that of the left speaker.
- Install the input and output cords away from the power supply lead as running them close together can generate some interference noise.
- This unit is a high-power amplifier. Therefore, it may not perform to its full potential if used with the speaker cords supplied with the car.
- If your car is equipped with a computer system for navigation or some other purpose, do not remove the ground wire from the car battery. If you disconnect the wire, the computer memory may be erased. To avoid short circuits when making connections, disconnect the +12 V power supply lead until all the other leads have been connected.

Make the terminal connections as illustrated below.



Note
When you tighten the screw, be careful not to apply too much torque as doing so may damage the screw.*

** The torque value should be less than 1 N•m.*



Pass the leads through the cap, connect the leads, then cover the terminals with the cap.

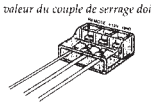
Attention

- Avant d'effectuer les connexions, débranchez la borne de masse de la batterie de voiture pour éviter un court-circuit.
- Utilisez des haut-parleurs d'une capacité adéquate. Si vous utilisez des haut-parleurs de faible capacité, ils risquent d'être endommagés.
- Ne raccordez pas la borne ⊖ du système de haut-parleurs à la carrosserie de la voiture ni la borne ⊖ du haut-parleur droit à celle du haut-parleur gauche.
- Eloignez les cordons d'entrée et de sortie du fil d'alimentation électrique pour éviter que des interférences ne se produisent.
- Cet appareil est un amplificateur de haute puissance et il peut ne pas atteindre sa puissance maximale s'il est employé avec les cordons de haut-parleur montés dans la voiture.
- Si votre voiture est équipée d'un ordinateur de bord pour la navigation ou à toute autre fin, ne débranchez pas le fil de masse de la batterie de la voiture. Si vous débranchez ce fil, toute la mémoire de l'ordinateur sera effacée. Pour éviter un court-circuit lorsque vous effectuez les branchements, branchez le fil d'alimentation de +12 volts uniquement après avoir branché tous les autres fils.

Effectuez les connexions de la borne de la manière indiquée ci-dessous.

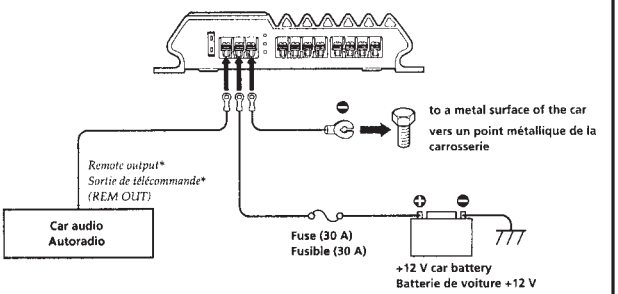
Remarque
Ne serrez pas la vis selon un couple trop fort car vous pourriez l'endommager.*

** La valeur du couple de serrage doit être inférieur à 1 N•m.*



Faites passer les fils par le cache, raccordez les fils et recouvrez les bornes avec le cache.

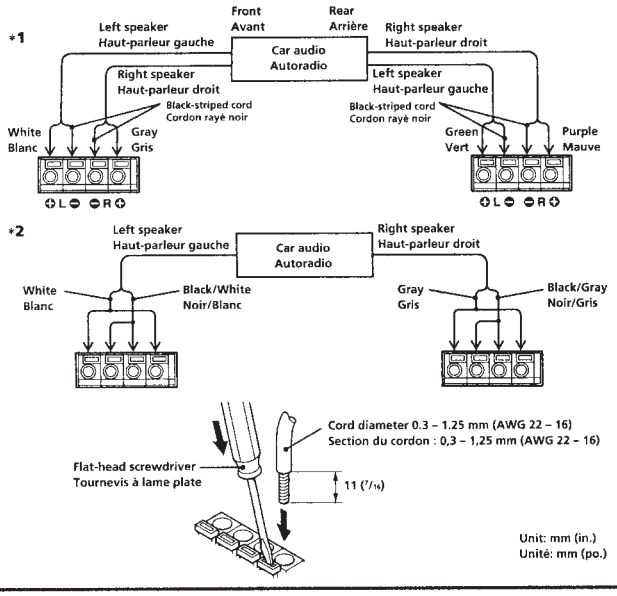
Power Connection Leads
Câbles d'alimentation



** If you have the factory original or some other car audio without a remote output on the amplifier, connect the remote input terminal (REMOTE) to the accessory power supply.*

** Si vous disposez du modèle d'origine ou d'un autre autoradio dont l'amplificateur ne comporte pas de sortie de télécommande, raccordez la borne d'entrée de télécommande (REMOTE) à la prise d'alimentation accessoires.*

Direct speaker cord connection
Raccordement direct du cordon de haut-parleur



Notes on the power supply
- *Connect the +12 V power supply lead only after all the other leads have been connected.*
- ***Be sure to connect the ground lead of the unit securely to a metal surface of the car. A loose connection may cause the amplifier to malfunction.***
- *Be sure to connect the remote control lead of the car audio to the remote terminal.*
- *When using a car audio without a remote output on the amplifier, connect the remote input terminal (REMOTE) to the accessory power supply.*
- *Use the power supply lead with a fuse attached (30 A).*
- *Place the fuse in the power supply lead as close as possible to the car battery.*
- *Make sure that the leads to be connected to the **+12 V** and **GND** terminals of this unit are larger than 10-Gauge (AWG-10) or have a sectional area of more than 5 mm².*
- *When using the optional RC-46 power amplifier connecting cord, consult that manual for proper use.*

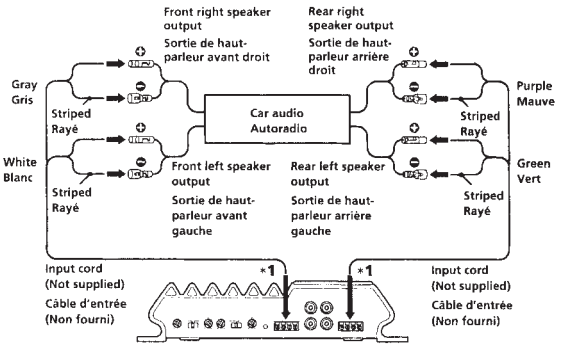
Remarques sur l'alimentation électrique
- *Raccordez le câble d'alimentation +12 V uniquement après avoir réalisé toutes les autres connexions.*
- ***Raccordez correctement le fil de masse de l'appareil à un point métallique de la voiture. Une connexion lâche risque de provoquer un dysfonctionnement de l'amplificateur.***
- *Veillez à raccorder le fil de télécommande de l'autoradio à la borne de télécommande.*
- *Si vous utilisez un autoradio dont l'amplificateur ne comporte pas de sortie de télécommande, raccordez la borne d'entrée de la télécommande (REMOTE) à la prise d'alimentation accessoires.*
- *Utilisez un câble d'alimentation muni d'un fusible (30 A).*
- *Fixez le câble d'alimentation le plus près possible de la batterie de voiture.*
- *Vous devez raccorder des câbles de calibre supérieur à 10 (AWG-10) ou d'une section supérieure à 5 mm² aux bornes **+12V** et **GND**.*
- *Lorsque vous utilisez le cordon de raccordement pour amplificateur RC-46 en option, consultez le manuel pour une utilisation correcte.*

Input Connections

Connexions d'entrée

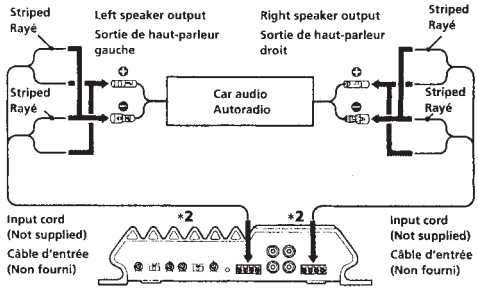
High Level Input Connection (with Speaker Connection 1, 2 or 4) A

Connexion d'entrée à haut niveau (avec connexion de haut-parleur 1, 2 ou 4)



High Level Input Connection (with Speaker Connection 3) B

Connexion d'entrée à haut niveau (avec connexion de haut-parleur 3)



Note

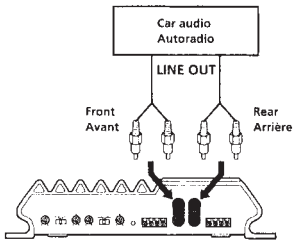
Make sure that the right speaker output from the car audio is connected to the connector marked "REAR" on the unit.

Remarque

Assurez-vous que la sortie du haut-parleur droit de l'autoradio est raccordée au connecteur portant l'indication "REAR" sur l'appareil.

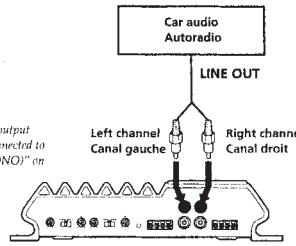
Line Input Connection (with Speaker Connection 1, 2 or 4) C

Connexion d'entrée de ligne (avec connexion de haut-parleur 1, 2 ou 4)



Line Input Connection (with Speaker Connection 3) D

Connexion d'entrée de ligne (avec connexion de haut-parleur 3)



Note

Make sure that the line output from the car audio is connected to the jack marked "1. (MONO)" on the unit.

Remarque

Vérifiez que la sortie de ligne de l'autoradio est raccordée à la prise portant l'indication "L (MONO)" sur l'appareil.

Speaker Connections

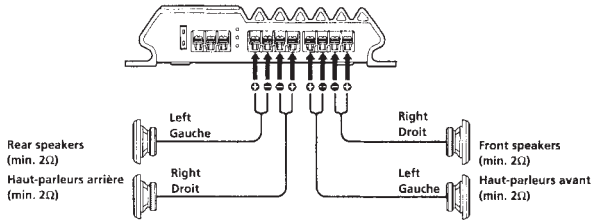
Raccordement de haut-parleurs

4-Speaker System (with Input Connection A or C) 1

Système à 4 haut-parleurs (avec connexion d'entrée A ou C)

For details on the settings of switches and controls, refer to "Location and Function of Controls."

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

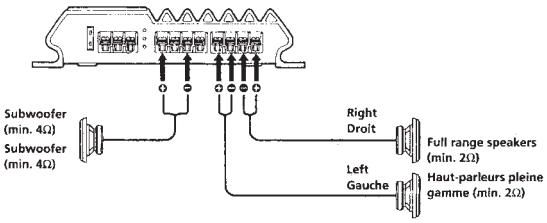


3-Speaker System (with Input Connection A or C) 2

Système à 3 haut-parleurs (avec connexion d'entrée A ou C)

For details on the settings of switches and controls, refer to "Location and Function of Controls."

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".



Notes

- *In this system, the volume of the subwoofer will be controlled by the car audio fader control.*
- *In this system, the output signals to the subwoofer will be the combination of both the REAR L and R INPUT jacks or the REAR high level input connector signals.*

Remarques

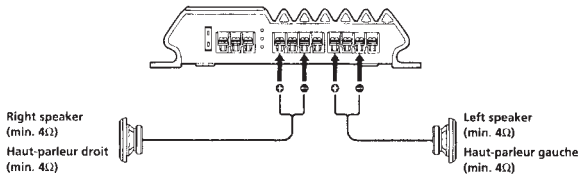
- *Dans ce système, le volume du subwoofer est contrôlé par le fader de l'autoradio.*
- *Dans ce système, les signaux de sortie vers le haut-parleur d'extrêmes-graves sont une combinaison des signaux des prises REAR L et R INPUT ou des signaux du connecteur d'entrée à haut niveau REAR.*

2-Speaker System (with Input Connection B or D) 3

Système à 2 haut-parleurs (avec connexion d'entrée B ou D)

For details on the settings of switches and controls, refer to "Location and Function of Controls."

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

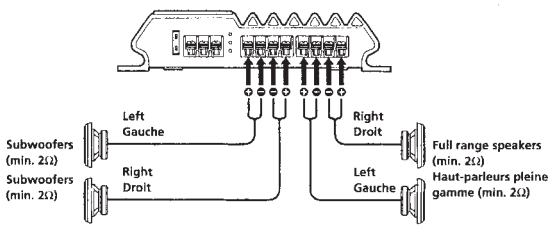


2-Way System (with Input Connection A or C) 4

Système à 2 voies (avec connexion d'entrée A ou C)

For details on the settings of switches and controls, refer to "Location and Function of Controls."

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".



Note

In this system, the volume of the subwoofers will be controlled by the car audio fader control.

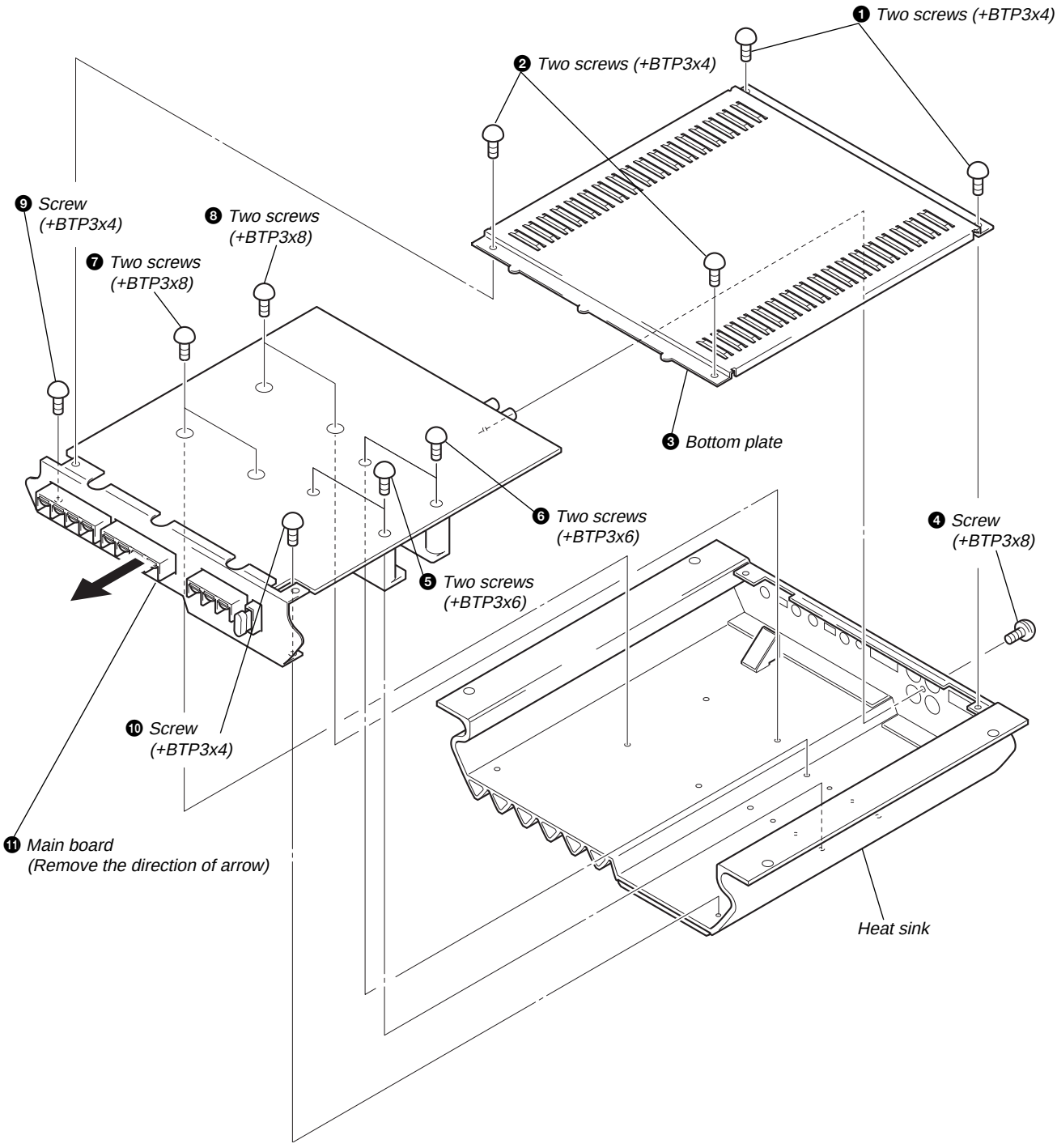
Remarque

Dans ce système, le volume des subwoofers est contrôlé par le fader de l'autoradio.

SECTION 2
DISASSEMBLY

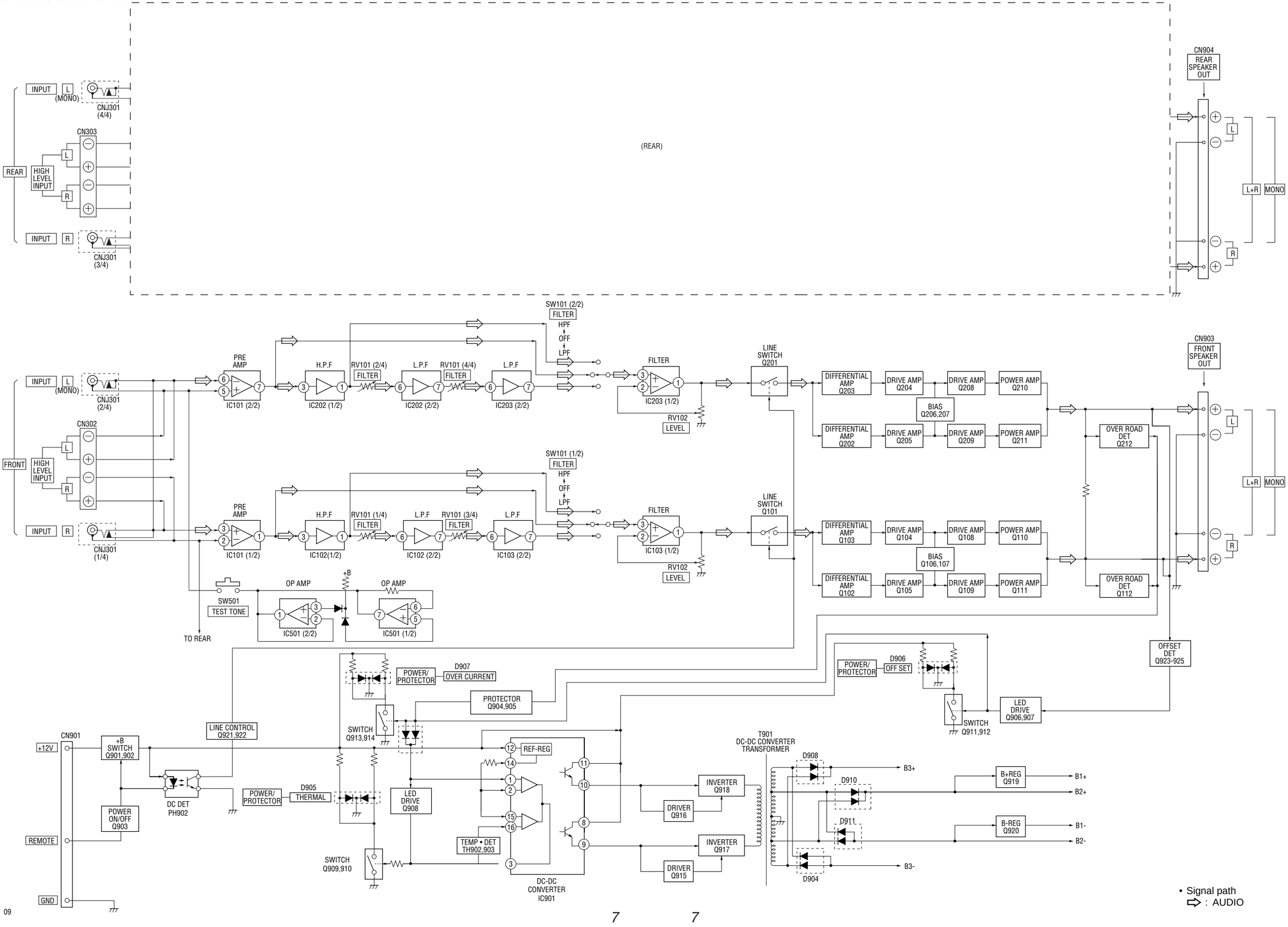
Note : Follow the disassembly procedure in the numerical order given.

2-1. MAIN BOARD REMOVAL



SECTION 3
DIAGRAMS

3-1. BLOCK DIAGRAM



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams.

Note:

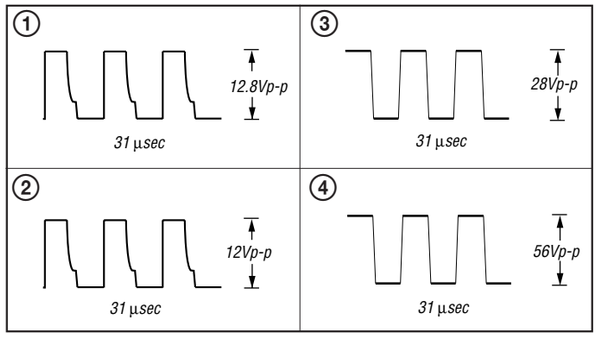
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ▭ : panel designation.
- B+ : B+ Line.
- Power voltage is dc 14.4V and fed with regulated dc power supply from ACC and BATT cords.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : POWER ON
  * : Impossible to measure
- Voltage are taken with a VOM (Input impedance 10 MΩ).
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : AUDIO

For printed wiring boards.

Note:

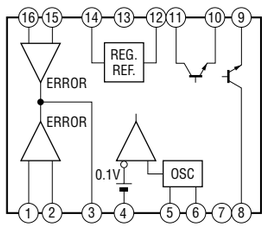
- ○——— : parts extracted from the component side.

• WAVEFORMS



• IC BLOCK DIAGRAM

IC901 TL494CN

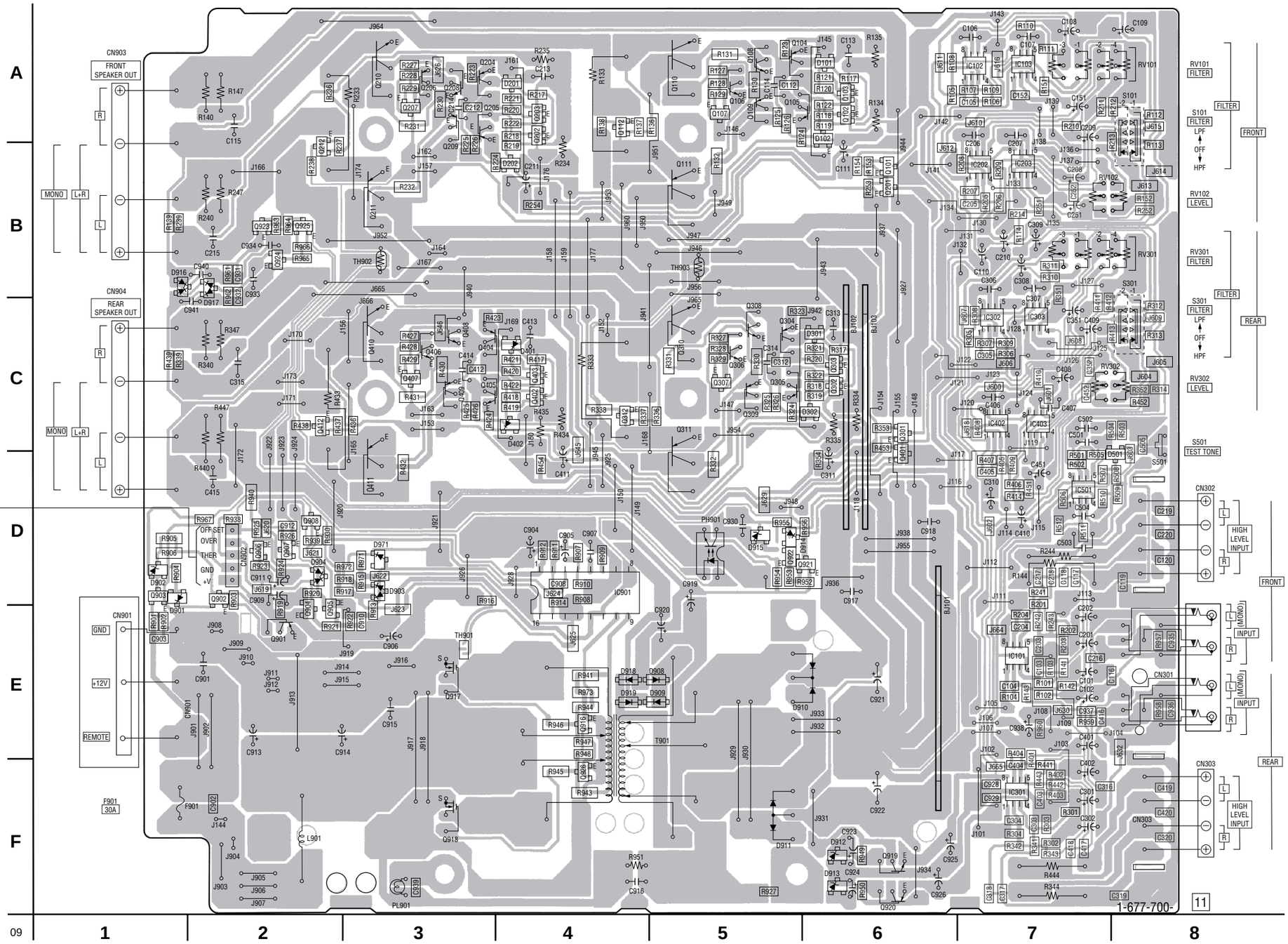


3-2. PRINTED WIRING BOARDS

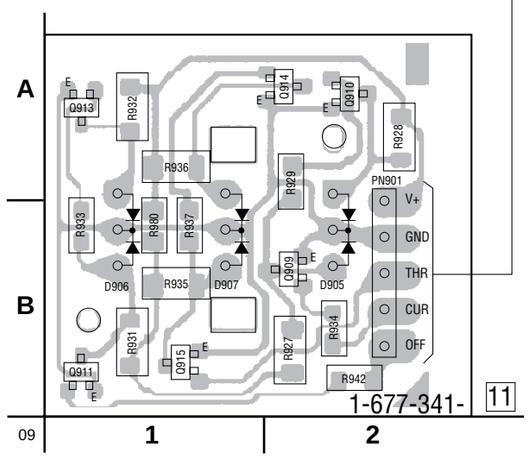
- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D101	A-6	Q203	A-4
D102	A-6	Q204	A-3
D201	A-4	Q205	A-3
D202	B-4	Q206	A-3
D301	C-6	Q207	A-3
D302	C-6	Q208	A-3
D401	C-4	Q209	A-3
D402	C-4	Q210	A-3
D501	D-8	Q211	B-3
D901	D-1	Q212	B-2
D902	D-1	Q301	C-6
D903	D-3	Q302	C-6
D904	D-2	Q303	C-6
D908	E-5	Q304	C-5
D909	E-5	Q305	C-5
D910	E-5	Q306	C-5
D911	F-5	Q307	C-5
D912	F-6	Q308	C-5
D913	F-6	Q309	C-5
D914	D-5	Q310	C-5
D915	D-5	Q311	C-5
D916	B-1	Q312	C-4
D917	B-2	Q401	D-6
D918	E-4	Q402	C-4
D919	E-4	Q403	C-4
D971	D-3	Q404	C-3
		Q405	C-3
IC101	E-7	Q406	C-3
IC102	A-7	Q407	C-3
IC103	A-7	Q408	C-3
IC202	B-7	Q409	C-3
IC203	B-7	Q410	C-3
IC301	F-7	Q411	D-3
IC302	C-7	Q412	C-2
IC303	C-7	Q901	E-2
IC402	C-7	Q902	D-2
IC403	C-7	Q903	D-1
IC501	D-7	Q904	E-2
IC901	D-4	Q905	E-2
		Q906	D-2
Q101	B-6	Q907	D-2
Q102	A-6	Q908	D-2
Q103	A-6	Q915	F-4
Q104	A-5	Q916	E-4
Q105	A-5	Q917	E-3
Q106	A-5	Q918	F-3
Q107	A-5	Q919	F-6
Q108	A-5	Q920	F-6
Q109	A-5	Q921	D-6
Q110	A-5	Q922	D-5
Q111	A-6	Q923	B-2
Q112	A-4	Q924	B-2
Q201	B-6	Q925	B-2
Q202	A-4		

【MAIN BOARD】

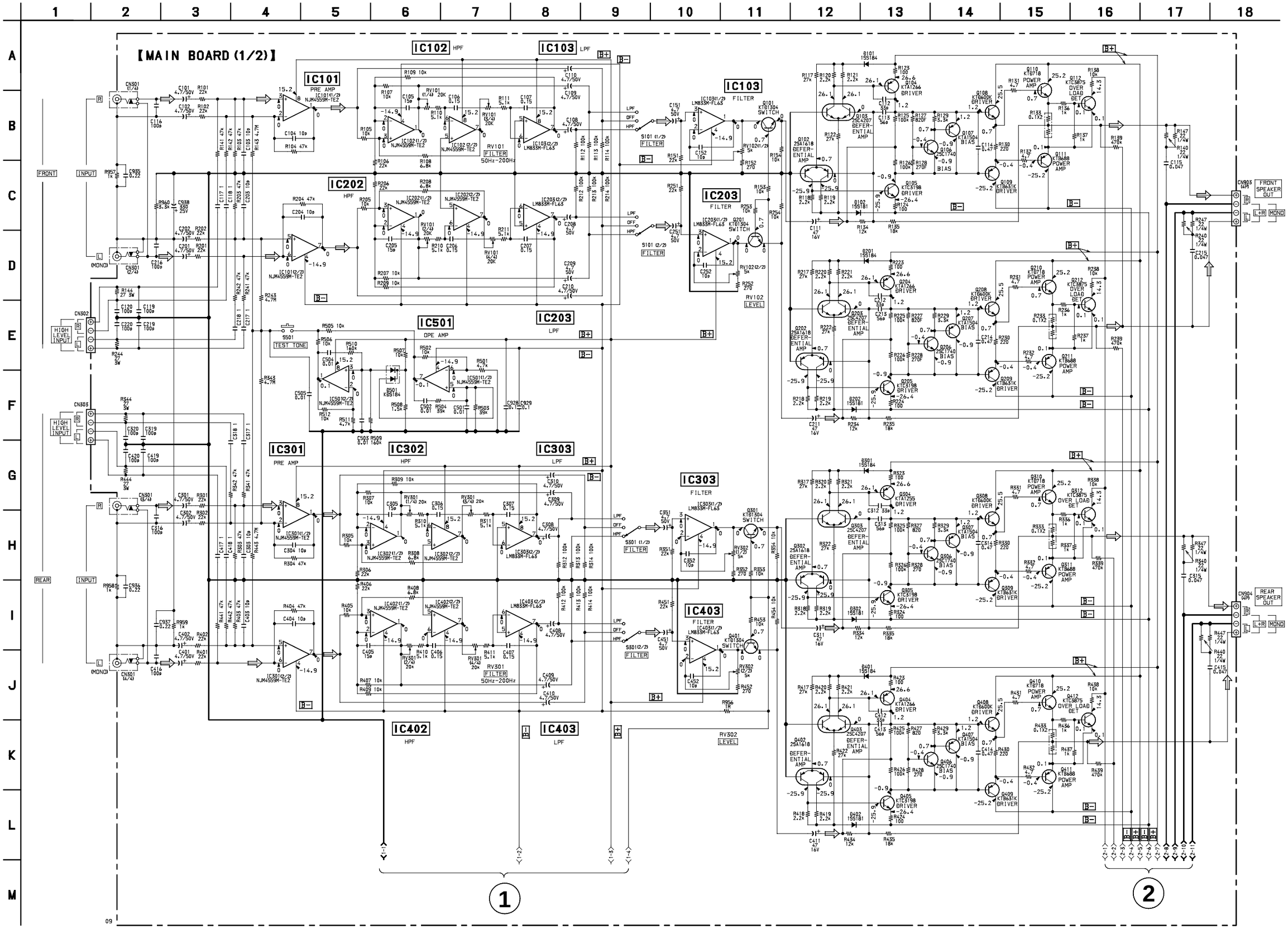


【LED BOARD】



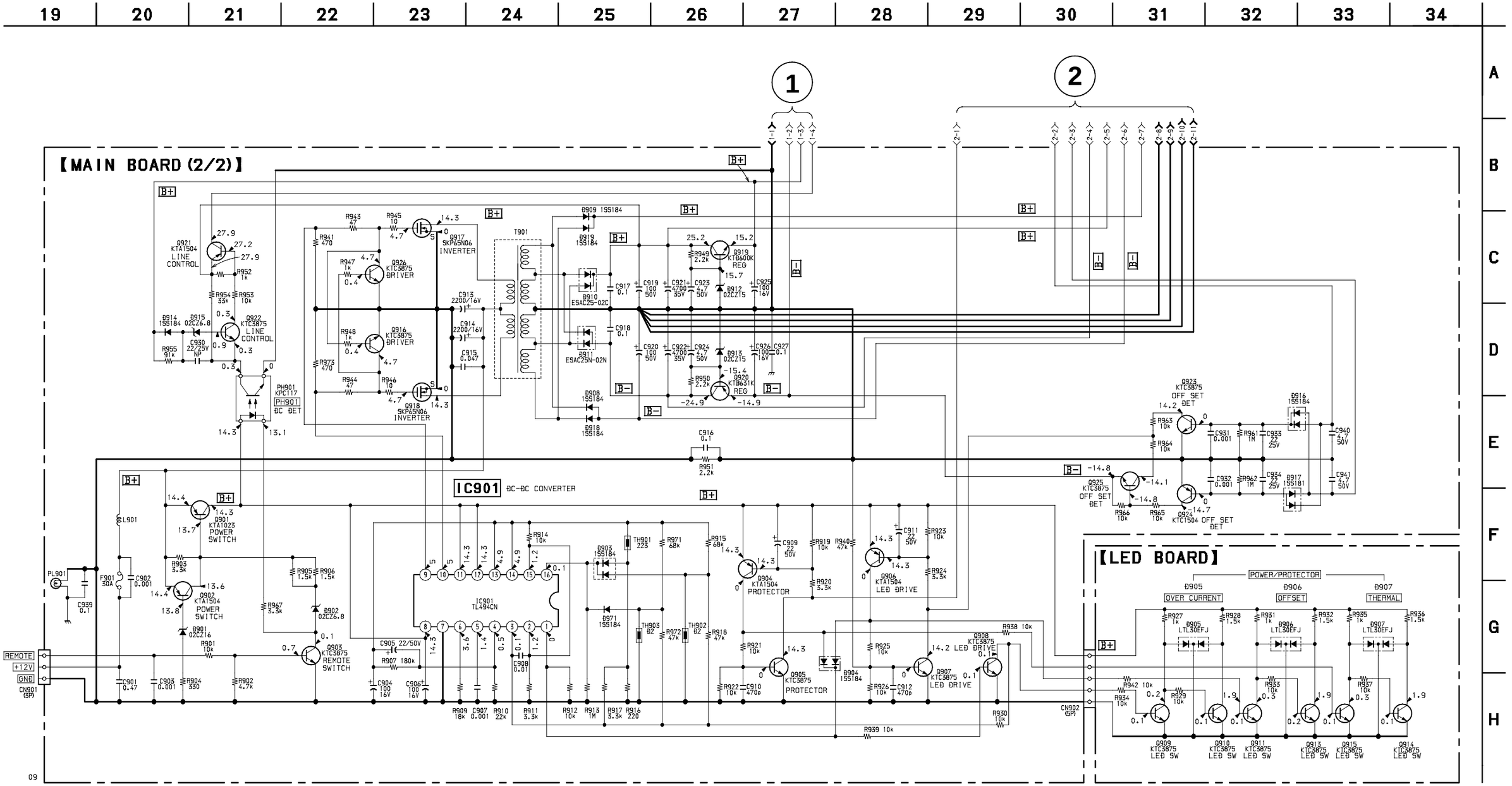
3-3. SCHEMATIC DIAGRAMS – MAIN (1/2) SECTION –

- See page 8 for Waveforms.
- See page 9 for Printed Wiring Boards.



3-4. SCHEMATIC DIAGRAMS – MAIN (2/2) SECTION –

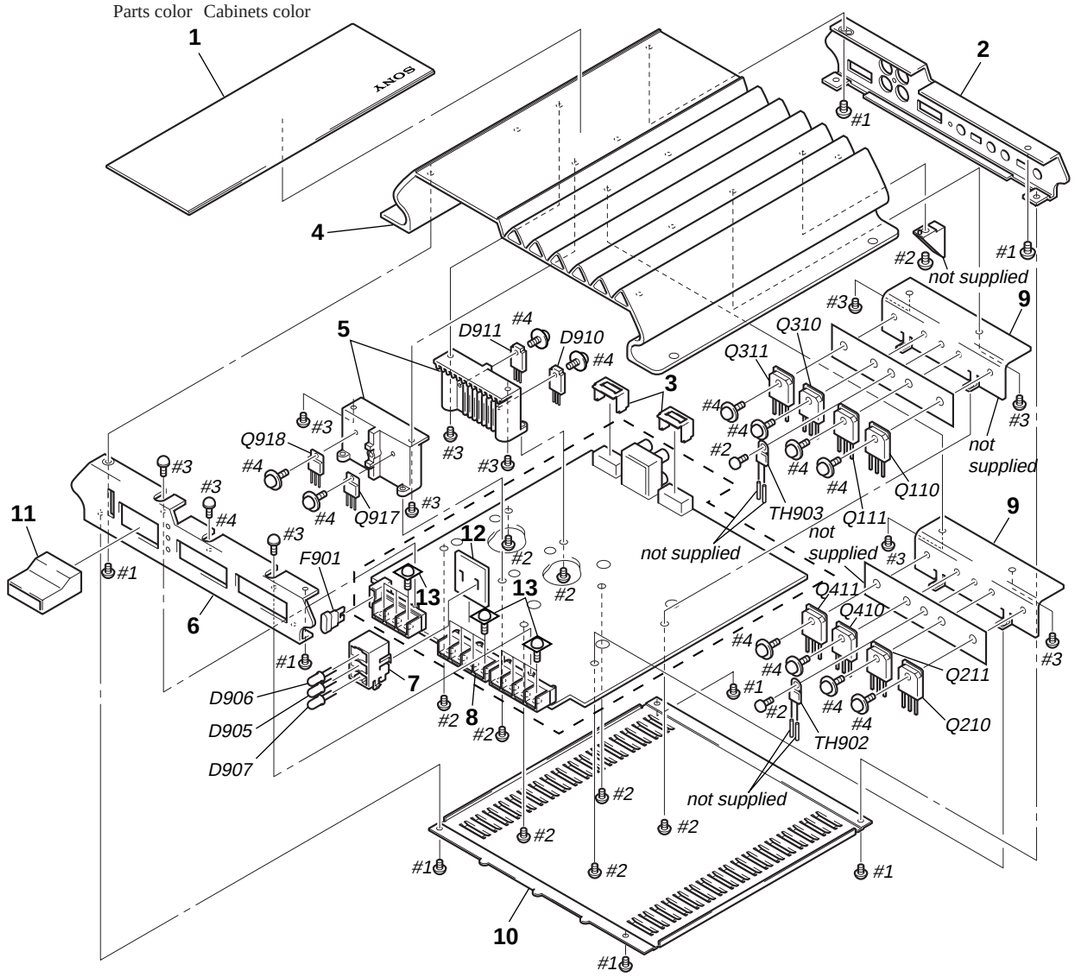
- **See page 8 for IC Block Diagrams.**
- **See page 9 for Printed Wiring Boards.**



SECTION 4
EXPLODED VIEW

NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . . (RED)
  ↑ ↑
  Parts color Cabinets color
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.



Ref. No.	Part No.	Description	Remark
* 1	3-045-635-01	PLATE, ORNAMENTAL (440EX)	
* 1	3-045-635-11	PLATE, ORNAMENTAL (440NX)	
* 2	3-045-633-01	PANEL (L) (440EX)	
* 2	3-045-633-11	PANEL (L) (440NX)	
* 3	3-045-622-01	BRACKET (HI-LEVEL)	
* 4	3-045-632-01	HEAT SINK (440EX)	
* 4	3-045-632-11	HEAT SINK (440NX)	
* 5	3-045-616-01	HEAT SINK (FET)	
* 6	3-045-634-01	PANEL (R) (440EX)	
* 6	3-045-634-11	PANEL (R) (440NX)	
* 7	3-045-614-01	HOLDER (LED)	
* 8	A-3326-387-A	MAIN BOARD, COMPLETE	
* 9	3-045-615-01	HEAT SINK (TR)	
* 10	3-045-636-01	PLATE, BOTTOM	
* 11	3-045-623-01	COVER	
* 12	1-677-609-11	LED BOARD	
13	3-048-307-01	SCREW (P)	
D905	8-719-079-03	DIODE LTL-30EFJ	
D906	8-719-079-03	DIODE LTL-30EFJ	
D907	8-719-079-03	DIODE LTL-30EFJ	
D910	8-719-912-51	DIODE ESAC25-02C	
D911	8-719-918-73	DIODE ESAC25-02N	
F901	1-532-947-11	FUSE (BLADE TYPE) (AUTO FUSE)	
Q110	8-729-052-06	TRANSISTOR KTD718	
Q111	8-729-052-05	TRANSISTOR KTB688	
Q210	8-729-052-06	TRANSISTOR KTD718	
Q211	8-729-052-05	TRANSISTOR KTB688	
Q310	8-729-052-06	TRANSISTOR KTD718	
Q311	8-729-052-05	TRANSISTOR KTB688	
Q410	8-729-052-06	TRANSISTOR KTD718	
Q411	8-729-052-05	TRANSISTOR KTB688	
Q917	8-729-052-00	TRANSISTOR SKP65N06	
Q918	8-729-052-00	TRANSISTOR SKP65N06	
TH902	1-809-664-51	THERMISTOR, POSITIVE	
TH903	1-809-664-51	THERMISTOR, POSITIVE	

LED **MAIN**

SECTION 5
ELECTRICAL PARTS LIST

Note:

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: µ , for example:
  uA...: µ A..., uPA...: µ PA..., uPB...: µ PB..., uPC...: µ PC..., uPD...: µ PD...
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H
- Abbreviation
  CND : Canadian model
  G : German model

Ref. No.	Part No.	Description			Remark
*	1-677-609-11	LED BOARD			
		**********			
		< DIODE >			
D905	8-719-079-03	DIODE LTL-30EFJ			
D906	8-719-079-03	DIODE LTL-30EFJ			
D907	8-719-079-03	DIODE LTL-30EFJ			
		< CONNECTOR >			
* PN901	1-506-653-11	PIN CONNECTOR, B-B 5P			
		< RESISTOR >			
R927	1-216-049-00	RES-CHIP	1K	5% 1/10W	
R928	1-216-053-00	METAL CHIP	1.5K	5% 1/10W	
R929	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R931	1-216-049-00	RES-CHIP	1K	5% 1/10W	
R932	1-216-053-00	METAL CHIP	1.5K	5% 1/10W	
R933	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R934	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R935	1-216-049-00	RES-CHIP	1K	5% 1/10W	
R936	1-216-053-00	METAL CHIP	1.5K	5% 1/10W	
R937	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R942	1-216-073-00	METAL CHIP	10K	5% 1/10W	
		< TRANSISTOR >			
Q909	8-729-034-51	TRANSISTOR KTC3875			
Q910	8-729-034-51	TRANSISTOR KTC3875			
Q911	8-729-034-51	TRANSISTOR KTC3875			
Q913	8-729-034-51	TRANSISTOR KTC3875			
Q914	8-729-034-51	TRANSISTOR KTC3875			
Q915	8-729-034-51	TRANSISTOR KTC3875			
**********					
*	A-3326-389-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-126-963-11	ELECT	4.7uF	20% 50V	
C102	1-126-963-11	ELECT	4.7uF	20% 50V	
C103	1-163-227-11	CERAMIC CHIP	10PF	0.50PF 50V	
C104	1-163-227-11	CERAMIC CHIP	10PF	0.50PF 50V	
C105	1-163-231-11	CERAMIC CHIP	15PF	5% 50V	
C106	1-130-497-00	MYLAR	0.15uF	5% 50V	
C107	1-130-497-00	MYLAR	0.15uF	5% 50V	
C108	1-126-963-11	ELECT	4.7uF	20% 50V	
C109	1-126-963-11	ELECT	4.7uF	20% 50V	
C110	1-126-963-11	ELECT	4.7uF	20% 50V	
C111	1-104-664-11	ELECT	47uF	20% 16V	
C112	1-163-239-11	CERAMIC CHIP	33PF	5% 50V	
C113	1-101-884-00	CERAMIC	56PF	5% 50V	
C114	1-136-899-11	MYLAR	0.47uF	5% 50V	
C115	1-130-491-00	MYLAR	0.047uF	5% 50V	
C116	1-163-251-11	CERAMIC CHIP	100PF	5% 50V	
C117	1-127-573-91	CERAMIC CHIP	1uF	10% 16V	
C118	1-127-573-91	CERAMIC CHIP	1uF	10% 16V	
C119	1-163-251-11	CERAMIC CHIP	100PF	5% 50V	
C120	1-163-251-11	CERAMIC CHIP	100PF	5% 50V	
C151	1-126-963-11	ELECT	4.7uF	20% 50V	
C152	1-163-227-11	CERAMIC CHIP	10PF	0.50PF 50V	
C201	1-126-963-11	ELECT	4.7uF	20% 50V	
C202	1-126-963-11	ELECT	4.7uF	20% 50V	
C203	1-163-227-11	CERAMIC CHIP	10PF	0.50PF 50V	
C204	1-163-227-11	CERAMIC CHIP	10PF	0.50PF 50V	
C205	1-163-231-11	CERAMIC CHIP	15PF	5% 50V	
C206	1-130-497-00	MYLAR	0.15uF	5% 50V	
C207	1-130-497-00	MYLAR	0.15uF	5% 50V	
C208	1-126-963-11	ELECT	4.7uF	20% 50V	
C209	1-126-963-11	ELECT	4.7uF	20% 50V	
C210	1-126-963-11	ELECT	4.7uF	20% 50V	
C211	1-104-664-11	ELECT	47uF	20% 16V	
C212	1-163-239-11	CERAMIC CHIP	33PF	5% 50V	
C213	1-101-884-00	CERAMIC	56PF	5% 50V	
C214	1-136-899-11	MYLAR	0.47uF	5% 50V	
C215	1-130-491-00	MYLAR	0.047uF	5% 50V	
C216	1-163-251-11	CERAMIC CHIP	100PF	5% 50V	
C217	1-127-573-91	CERAMIC CHIP	1uF	10% 16V	
C218	1-127-573-91	CERAMIC CHIP	1uF	10% 16V	
C219	1-163-251-11	CERAMIC CHIP	100PF	5% 50V	
C220	1-163-251-11	CERAMIC CHIP	100PF	5% 50V	
C251	1-126-963-11	ELECT	4.7uF	20% 50V	
C252	1-163-227-11	CERAMIC CHIP	10PF	0.50PF 50V	
C301	1-126-963-11	ELECT	4.7uF	20% 50V	
C302	1-126-963-11	ELECT	4.7uF	20% 50V	
C303	1-163-227-11	CERAMIC CHIP	10PF	0.50PF 50V	
C304	1-163-227-11	CERAMIC CHIP	10PF	0.50PF 50V	
C305	1-163-231-11	CERAMIC CHIP	15PF	5% 50V	
C306	1-130-497-00	MYLAR	0.15uF	5% 50V	
C307	1-130-497-00	MYLAR	0.15uF	5% 50V	
C308	1-126-963-11	ELECT	4.7uF	20% 50V	

Ref. No.	Part No.	Description			Remark
C309	1-126-963-11	ELECT	4.7uF	20%	50V
C310	1-126-963-11	ELECT	4.7uF	20%	50V
C311	1-104-664-11	ELECT	47uF	20%	16V
C312	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C313	1-101-884-00	CERAMIC	56PF	5%	50V
C314	1-136-899-11	MYLAR	0.47uF	5%	50V
C315	1-130-491-00	MYLAR	0.047uF	5%	50V
C316	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C317	1-127-573-91	CERAMIC CHIP	1uF	10%	16V
C318	1-127-573-91	CERAMIC CHIP	1uF	10%	16V
C319	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C320	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C351	1-126-963-11	ELECT	4.7uF	20%	50V
C352	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
C401	1-126-963-11	ELECT	4.7uF	20%	50V
C402	1-126-963-11	ELECT	4.7uF	20%	50V
C403	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
C404	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
C405	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C406	1-130-497-00	MYLAR	0.15uF	5%	50V
C407	1-130-497-00	MYLAR	0.15uF	5%	50V
C408	1-126-963-11	ELECT	4.7uF	20%	50V
C409	1-126-963-11	ELECT	4.7uF	20%	50V
C410	1-126-963-11	ELECT	4.7uF	20%	50V
C411	1-104-664-11	ELECT	47uF	20%	16V
C412	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C413	1-101-884-00	CERAMIC	56PF	5%	50V
C414	1-136-899-11	MYLAR	0.47uF	5%	50V
C415	1-130-491-00	MYLAR	0.047uF	5%	50V
C416	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C417	1-127-573-91	CERAMIC CHIP	1uF	10%	16V
C418	1-127-573-91	CERAMIC CHIP	1uF	10%	16V
C419	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C420	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C451	1-126-963-11	ELECT	4.7uF	20%	50V
C452	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
C501	1-130-483-00	MYLAR	0.01uF	5%	50V
C502	1-130-483-00	MYLAR	0.01uF	5%	50V
C503	1-130-483-00	MYLAR	0.01uF	5%	50V
C504	1-130-483-00	MYLAR	0.01uF	5%	50V
C505	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V
C901	1-136-899-11	MYLAR	0.47uF	5%	50V
C902	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C903	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C904	1-126-933-11	ELECT	100uF	20%	16V
C905	1-126-965-11	ELECT	22uF	20%	50V
C906	1-126-933-11	ELECT	100uF	20%	16V
C907	1-130-471-00	MYLAR	0.001uF	5%	50V
C908	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V
C909	1-126-965-11	ELECT	22uF	20%	50V
C910	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C911	1-126-965-11	ELECT	22uF	20%	50V
C912	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C913	1-111-042-11	ELECT	2200uF	20%	16V
C914	1-111-042-11	ELECT	2200uF	20%	16V
C915	1-130-491-00	MYLAR	0.047uF	5%	50V
C916	1-164-732-11	CERAMIC	0.1uF	20%	50V
C917	1-130-495-00	MYLAR	0.1uF	5%	50V
C918	1-130-495-00	MYLAR	0.1uF	5%	50V
C919	1-126-968-11	ELECT	100uF	20%	50V
C920	1-126-968-11	ELECT	100uF	20%	50V
C921	1-126-955-11	ELECT	4700uF	20%	35V
C922	1-126-955-11	ELECT	4700uF	20%	35V
C923	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C924	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C925	1-126-933-11	ELECT	100uF	20%	16V
C926	1-126-933-11	ELECT	100uF	20%	16V
C927	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C928	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C929	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C930	1-107-715-11	ELECT	22uF	20%	25V
C931	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C932	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C933	1-107-715-11	ELECT	22uF	20%	25V
C934	1-107-715-11	ELECT	22uF	20%	25V
C935	1-115-340-11	CERAMIC CHIP	0.22uF	10%	25V
C936	1-115-340-11	CERAMIC CHIP	0.22uF	10%	25V
C937	1-115-340-11	CERAMIC CHIP	0.22uF	10%	25V
C938	1-126-940-11	ELECT	330uF	20%	16V
C939	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C940	1-107-713-11	CERAMIC	4.7uF	20%	50V
C941	1-107-713-11	CERAMIC	4.7uF	20%	50V

< CONNECTOR >

CN301	1-779-078-41	JACK, PIN 4P (INPUT)
CN302	1-794-219-11	CONNECTOR (4P)(HIGH LEVEL INPUT(FRONT))
CN303	1-794-219-11	CONNECTOR (4P)(HIGH LEVEL INPUT(REAR))
CN901	1-694-691-11	TERMINAL BOARD (3P)(REMOTE/+12V/GND)
CN903	1-694-690-11	TERMINAL BOARD (4P)(FRONT SPEAKER OUT)
CN904	1-694-690-11	TERMINAL BOARD (4P)(REAR SPEAKER OUT)

< DIODE >

D101	8-719-801-78	DIODE 1SS184-TE85L
D102	8-719-820-05	DIODE 1SS181-TE85L
D201	8-719-801-78	DIODE 1SS184-TE85L
D202	8-719-820-05	DIODE 1SS181-TE85L
D301	8-719-801-78	DIODE 1SS184-TE85L
D302	8-719-820-05	DIODE 1SS181-TE85L
D401	8-719-801-78	DIODE 1SS184-TE85L
D402	8-719-820-05	DIODE 1SS181-TE85L
D501	8-719-801-78	DIODE 1SS184-TE85L
D901	8-719-025-50	DIODE 02CZ16-TE85L
D902	8-719-025-34	DIODE 02CZ6.8-TE85L
D903	8-719-801-78	DIODE 1SS184-TE85L
D904	8-719-801-78	DIODE 1SS184-TE85L
D908	8-719-801-78	DIODE 1SS184-TE85L
D909	8-719-801-78	DIODE 1SS184-TE85L
D910	8-719-912-51	DIODE ESAC25-02C
D911	8-719-918-73	DIODE ESAC25-02N
D912	8-719-025-49	DIODE 02CZ15-TE85L
D913	8-719-025-49	DIODE 02CZ15-TE85L
D914	8-719-801-78	DIODE 1SS184-TE85L
D915	8-719-025-34	DIODE 02CZ6.8-TE85L
D916	8-719-801-78	DIODE 1SS184-TE85L
D917	8-719-801-78	DIODE 1SS184-TE85L
D918	8-719-801-78	DIODE 1SS184-TE85L
D919	8-719-801-78	DIODE 1SS184-TE85L
D971	8-719-801-78	DIODE 1SS184-TE85L

MAIN

Ref. No.	Part No.	Description	Remark
		<FUSE>	
F901	1-532-947-11	FUSE (BLADE TYPE)(AUTO FUSE)(30A)	
		< IC >	
IC101	8-759-394-81	IC NJM4559M-TE2	
IC102	8-759-394-81	IC NJM4559M-TE2	
IC103	8-759-970-66	IC LM833M-FL63	
IC202	8-759-394-81	IC NJM4559M-TE2	
IC203	8-759-970-66	IC LM833M-FL63	
IC301	8-759-394-81	IC NJM4559M-TE2	
IC302	8-759-394-81	IC NJM4559M-TE2	
IC303	8-759-970-66	IC LM833M-FL63	
IC402	8-759-394-81	IC NJM4559M-TE2	
IC403	8-759-970-66	IC LM833M-FL63	
IC501	8-759-394-81	IC NJM4559M-TE2	
IC901	8-759-904-94	IC TL494CN	
		< JACK >	
J600	1-216-295-00	SHORT 0	
J601	1-216-295-00	SHORT 0	
J602	1-216-295-00	SHORT 0	
J603	1-216-295-00	SHORT 0	
J604	1-216-296-00	SHORT 0	
J605	1-216-296-00	SHORT 0	
J606	1-216-295-00	SHORT 0	
J607	1-216-295-00	SHORT 0	
J608	1-216-295-00	SHORT 0	
J609	1-216-295-00	SHORT 0	
J610	1-216-295-00	SHORT 0	
J611	1-216-295-00	SHORT 0	
J612	1-216-295-00	SHORT 0	
J613	1-216-296-00	SHORT 0	
J614	1-216-296-00	SHORT 0	
J615	1-216-295-00	SHORT 0	
J616	1-216-296-00	SHORT 0	
J618	1-216-295-00	SHORT 0	
J619	1-216-295-00	SHORT 0	
J620	1-216-295-00	SHORT 0	
J621	1-216-295-00	SHORT 0	
J622	1-216-295-00	SHORT 0	
J623	1-216-296-00	SHORT 0	
J624	1-216-295-00	SHORT 0	
J625	1-216-296-00	SHORT 0	
J626	1-216-296-00	SHORT 0	
J629	1-216-296-00	SHORT 0	
J630	1-216-295-00	SHORT 0	
J632	1-216-296-00	SHORT 0	
J645	1-216-296-00	SHORT 0	
J646	1-216-296-00	SHORT 0	
J664	1-216-296-00	SHORT 0	
J665	1-216-296-00	SHORT 0	
		< COIL >	
L901	1-411-180-11	INDUCTOR 0uH	
		< PHOTO INTERRUPTER >	
PH901	8-749-017-47	IC KPC117GR	

Ref. No.	Part No.	Description	Remark
		< PILOT LAMP >	
PL901	1-518-540-11	LAMP, PILOT	
		< TRANSISTOR >	
Q101	8-729-052-02	TRANSISTOR KTD1304	
Q102	8-729-232-66	TRANSISTOR 2SA1618-YGRTE85L	
Q103	8-729-014-86	TRANSISTOR 2SC4207-YGRTE85L	
Q104	8-729-037-03	TRANSISTOR KTA1266GR-AT	
Q105	8-729-036-90	TRANSISTOR KTC3198BL-AT	
Q106	8-729-045-02	TRANSISTOR KTC3200GR-AT	
Q107	8-729-034-50	TRANSISTOR KTA1504	
Q108	8-729-052-04	TRANSISTOR KTD600K	
Q109	8-729-052-03	TRANSISTOR KTB631K	
Q110	8-729-052-06	TRANSISTOR KTD718	
Q111	8-729-052-05	TRANSISTOR KTB688	
Q112	8-729-034-51	TRANSISTOR KTC3875	
Q201	8-729-052-02	TRANSISTOR KTD1304	
Q202	8-729-232-66	TRANSISTOR 2SA1618-YGRTE85L	
Q203	8-729-014-86	TRANSISTOR 2SC4207-YGRTE85L	
Q204	8-729-037-03	TRANSISTOR KTA1266GR-AT	
Q205	8-729-036-90	TRANSISTOR KTC3198BL-AT	
Q206	8-729-045-02	TRANSISTOR KTC3200GR-AT	
Q207	8-729-034-50	TRANSISTOR KTA1504	
Q208	8-729-052-04	TRANSISTOR KTD600K	
Q209	8-729-052-03	TRANSISTOR KTB631K	
Q210	8-729-052-06	TRANSISTOR KTD718	
Q211	8-729-052-05	TRANSISTOR KTB688	
Q212	8-729-034-51	TRANSISTOR KTC3875	
Q301	8-729-052-02	TRANSISTOR KTD1304	
Q302	8-729-232-66	TRANSISTOR 2SA1618-YGRTE85L	
Q303	8-729-014-86	TRANSISTOR 2SC4207-YGRTE85L	
Q304	8-729-037-03	TRANSISTOR KTA1266GR-AT	
Q305	8-729-036-90	TRANSISTOR KTC3198BL-AT	
Q306	8-729-045-02	TRANSISTOR KTC3200GR-AT	
Q307	8-729-034-50	TRANSISTOR KTA1504	
Q308	8-729-052-04	TRANSISTOR KTD600K	
Q309	8-729-052-03	TRANSISTOR KTB631K	
Q310	8-729-052-06	TRANSISTOR KTD718	
Q311	8-729-052-05	TRANSISTOR KTB688	
Q312	8-729-034-51	TRANSISTOR KTC3875	
Q401	8-729-052-02	TRANSISTOR KTD1304	
Q402	8-729-232-66	TRANSISTOR 2SA1618-YGRTE85L	
Q403	8-729-014-86	TRANSISTOR 2SC4207-YGRTE85L	
Q404	8-729-037-03	TRANSISTOR KTA1266GR-AT	
Q405	8-729-036-90	TRANSISTOR KTC3198BL-AT	
Q406	8-729-045-02	TRANSISTOR KTC3200GR-AT	
Q407	8-729-034-50	TRANSISTOR KTA1504	
Q408	8-729-052-04	TRANSISTOR KTD600K	
Q409	8-729-052-03	TRANSISTOR KTB631K	
Q410	8-729-052-06	TRANSISTOR KTD718	
Q411	8-729-052-05	TRANSISTOR KTB688	
Q412	8-729-034-51	TRANSISTOR KTC3875	
Q901	8-729-052-01	TRANSISTOR KTA1023	
Q902	8-729-034-50	TRANSISTOR KTA1504	
Q903	8-729-034-51	TRANSISTOR KTC3875	
Q904	8-729-034-50	TRANSISTOR KTA1504	
Q905	8-729-034-51	TRANSISTOR KTC3875	
Q906	8-729-034-50	TRANSISTOR KTA1504	

Ref. No.	Part No.	Description			Remark
Q907	8-729-034-51	TRANSISTOR	KTC3875		
Q908	8-729-034-51	TRANSISTOR	KTC3875		
Q916	8-729-034-51	TRANSISTOR	KTC3875		
Q917	8-729-052-00	TRANSISTOR	SKP65N06		
Q918	8-729-052-00	TRANSISTOR	SKP65N06		
Q919	8-729-052-04	TRANSISTOR	KTD600K		
Q920	8-729-052-03	TRANSISTOR	KTB631K		
Q921	8-729-034-50	TRANSISTOR	KTA1504		
Q922	8-729-034-51	TRANSISTOR	KTC3875		
Q923	8-729-034-51	TRANSISTOR	KTC3875		
Q924	8-729-034-50	TRANSISTOR	KTA1504		
Q925	8-729-034-51	TRANSISTOR	KTC3875		
Q926	8-729-034-51	TRANSISTOR	KTC3875		
		< RESISTOR >			
R101	1-216-081-00	METAL CHIP	22K	5%	1/10W
R102	1-216-081-00	METAL CHIP	22K	5%	1/10W
R103	1-216-089-00	RES-CHIP	47K	5%	1/10W
R104	1-216-089-00	RES-CHIP	47K	5%	1/10W
R105	1-216-073-00	METAL CHIP	10K	5%	1/10W
R106	1-216-081-00	METAL CHIP	22K	5%	1/10W
R107	1-216-073-00	METAL CHIP	10K	5%	1/10W
R108	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R109	1-216-073-00	METAL CHIP	10K	5%	1/10W
R110	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R111	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R112	1-216-097-00	RES-CHIP	100K	5%	1/10W
R113	1-216-097-00	RES-CHIP	100K	5%	1/10W
R114	1-216-097-00	RES-CHIP	100K	5%	1/10W
R117	1-216-083-00	METAL CHIP	27K	5%	1/10W
R118	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R119	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R120	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R121	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R122	1-216-083-00	METAL CHIP	27K	5%	1/10W
R123	1-216-025-00	RES-CHIP	100	5%	1/10W
R124	1-216-025-00	RES-CHIP	100	5%	1/10W
R125	1-216-097-00	RES-CHIP	100K	5%	1/10W
R126	1-216-097-00	RES-CHIP	100K	5%	1/10W
R127	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R128	1-216-637-11	METAL CHIP	270	0.5%	1/10W
R129	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R130	1-216-182-00	RES-CHIP	220	5%	1/8W
R131	1-216-142-00	RES-CHIP	4.7	5%	1/8W
R132	1-216-142-00	RES-CHIP	4.7	5%	1/8W
R133	1-205-991-11	METAL	0.1	10%	
R134	1-259-454-11	CARBON	12K	5%	1/6W
R135	1-259-458-11	CARBON	18K	5%	1/6W
R136	1-216-049-00	RES-CHIP	1K	5%	1/10W
R137	1-216-049-00	RES-CHIP	1K	5%	1/10W
R138	1-216-073-00	METAL CHIP	10K	5%	1/10W
R139	1-216-113-00	METAL CHIP	470K	5%	1/10W
R140	1-249-883-11	CARBON	22	5%	1/4W
R141	1-216-089-00	RES-CHIP	47K	5%	1/10W
R142	1-216-089-00	RES-CHIP	47K	5%	1/10W
R143	1-208-291-11	RES-CHIP	4.7M	5%	1/10W
R144	1-216-471-11	METAL OXIDE	27	5%	3W

Ref. No.	Part No.	Description			Remark
R147	1-249-883-11	CARBON	22	5%	1/4W
R151	1-216-081-00	METAL CHIP	22K	5%	1/10W
R152	1-216-035-00	METAL CHIP	270	5%	1/10W
R153	1-216-073-00	METAL CHIP	10K	5%	1/10W
R154	1-216-073-00	METAL CHIP	10K	5%	1/10W
R201	1-216-081-00	METAL CHIP	22K	5%	1/10W
R202	1-216-081-00	METAL CHIP	22K	5%	1/10W
R203	1-216-089-00	RES-CHIP	47K	5%	1/10W
R204	1-216-089-00	RES-CHIP	47K	5%	1/10W
R205	1-216-073-00	METAL CHIP	10K	5%	1/10W
R206	1-216-081-00	METAL CHIP	22K	5%	1/10W
R207	1-216-073-00	METAL CHIP	10K	5%	1/10W
R208	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W
R210	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R211	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R212	1-216-097-00	RES-CHIP	100K	5%	1/10W
R213	1-216-097-00	RES-CHIP	100K	5%	1/10W
R214	1-216-097-00	RES-CHIP	100K	5%	1/10W
R217	1-216-083-00	METAL CHIP	27K	5%	1/10W
R218	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R219	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R220	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R221	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R222	1-216-083-00	METAL CHIP	27K	5%	1/10W
R223	1-216-025-00	RES-CHIP	100	5%	1/10W
R224	1-216-025-00	RES-CHIP	100	5%	1/10W
R225	1-216-097-00	RES-CHIP	100K	5%	1/10W
R226	1-216-097-00	RES-CHIP	100K	5%	1/10W
R227	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R228	1-216-637-11	METAL CHIP	270	0.5%	1/10W
R229	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R230	1-216-182-00	RES-CHIP	220	5%	1/8W
R231	1-216-142-00	RES-CHIP	4.7	5%	1/8W
R232	1-216-142-00	RES-CHIP	4.7	5%	1/8W
R233	1-205-991-11	METAL	0.1	10%	
R234	1-259-454-11	CARBON	12K	5%	1/6W
R235	1-259-458-11	CARBON	18K	5%	1/6W
R236	1-216-049-00	RES-CHIP	1K	5%	1/10W
R237	1-216-049-00	RES-CHIP	1K	5%	1/10W
R238	1-216-073-00	METAL CHIP	10K	5%	1/10W
R239	1-216-113-00	METAL CHIP	470K	5%	1/10W
R240	1-249-883-11	CARBON	22	5%	1/4W
R241	1-216-089-00	RES-CHIP	47K	5%	1/10W
R242	1-216-089-00	RES-CHIP	47K	5%	1/10W
R243	1-208-291-11	RES-CHIP	4.7M	5%	1/10W
R244	1-216-471-11	METAL OXIDE	27	5%	3W
R247	1-249-883-11	CARBON	22	5%	1/4W
R251	1-216-081-00	METAL CHIP	22K	5%	1/10W
R252	1-216-035-00	METAL CHIP	270	5%	1/10W
R253	1-216-073-00	METAL CHIP	10K	5%	1/10W
R254	1-216-073-00	METAL CHIP	10K	5%	1/10W
R301	1-216-081-00	METAL CHIP	22K	5%	1/10W
R302	1-216-081-00	METAL CHIP	22K	5%	1/10W
R303	1-216-089-00	RES-CHIP	47K	5%	1/10W
R304	1-216-089-00	RES-CHIP	47K	5%	1/10W
R305	1-216-073-00	METAL CHIP	10K	5%	1/10W
R306	1-216-081-00	METAL CHIP	22K	5%	1/10W

MAIN

Ref. No.	Part No.	Description			Remark
R307	1-216-073-00	METAL CHIP	10K	5%	1/10W
R308	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W
R310	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R311	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R312	1-216-097-00	RES-CHIP	100K	5%	1/10W
R313	1-216-097-00	RES-CHIP	100K	5%	1/10W
R314	1-216-097-00	RES-CHIP	100K	5%	1/10W
R317	1-216-083-00	METAL CHIP	27K	5%	1/10W
R318	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R319	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R320	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R321	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R322	1-216-083-00	METAL CHIP	27K	5%	1/10W
R323	1-216-025-00	RES-CHIP	100	5%	1/10W
R324	1-216-025-00	RES-CHIP	100	5%	1/10W
R325	1-216-097-00	RES-CHIP	100K	5%	1/10W
R326	1-216-097-00	RES-CHIP	100K	5%	1/10W
R327	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R328	1-216-637-11	METAL CHIP	270	0.5%	1/10W
R329	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R330	1-216-182-00	RES-CHIP	220	5%	1/8W
R331	1-216-142-00	RES-CHIP	4.7	5%	1/8W
R332	1-216-142-00	RES-CHIP	4.7	5%	1/8W
R333	1-205-991-11	METAL	0.1	10%	
R334	1-259-454-11	CARBON	12K	5%	1/6W
R335	1-259-458-11	CARBON	18K	5%	1/6W
R336	1-216-049-00	RES-CHIP	1K	5%	1/10W
R337	1-216-049-00	RES-CHIP	1K	5%	1/10W
R338	1-216-073-00	METAL CHIP	10K	5%	1/10W
R339	1-216-113-00	METAL CHIP	470K	5%	1/10W
R340	1-249-883-11	CARBON	22	5%	1/4W
R341	1-216-089-00	RES-CHIP	47K	5%	1/10W
R342	1-216-089-00	RES-CHIP	47K	5%	1/10W
R343	1-208-291-11	RES-CHIP	4.7M	5%	1/10W
R344	1-216-471-11	METAL OXIDE	27	5%	3W
R347	1-249-883-11	CARBON	22	5%	1/4W
R351	1-216-081-00	METAL CHIP	22K	5%	1/10W
R352	1-216-035-00	METAL CHIP	270	5%	1/10W
R353	1-216-073-00	METAL CHIP	10K	5%	1/10W
R354	1-216-073-00	METAL CHIP	10K	5%	1/10W
R401	1-216-081-00	METAL CHIP	22K	5%	1/10W
R402	1-216-081-00	METAL CHIP	22K	5%	1/10W
R403	1-216-089-00	RES-CHIP	47K	5%	1/10W
R404	1-216-089-00	RES-CHIP	47K	5%	1/10W
R405	1-216-073-00	METAL CHIP	10K	5%	1/10W
R406	1-216-081-00	METAL CHIP	22K	5%	1/10W
R407	1-216-073-00	METAL CHIP	10K	5%	1/10W
R408	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R409	1-216-073-00	METAL CHIP	10K	5%	1/10W
R410	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R411	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R412	1-216-097-00	RES-CHIP	100K	5%	1/10W
R413	1-216-097-00	RES-CHIP	100K	5%	1/10W
R414	1-216-097-00	RES-CHIP	100K	5%	1/10W
R417	1-216-083-00	METAL CHIP	27K	5%	1/10W
R418	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R419	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R420	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R421	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R422	1-216-083-00	METAL CHIP	27K	5%	1/10W
R423	1-216-025-00	RES-CHIP	100	5%	1/10W
R424	1-216-025-00	RES-CHIP	100	5%	1/10W
R425	1-216-097-00	RES-CHIP	100K	5%	1/10W
R426	1-216-097-00	RES-CHIP	100K	5%	1/10W
R427	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R428	1-216-637-11	METAL CHIP	270	0.5%	1/10W
R429	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R430	1-216-182-00	RES-CHIP	220	5%	1/8W
R431	1-216-142-00	RES-CHIP	4.7	5%	1/8W
R432	1-216-142-00	RES-CHIP	4.7	5%	1/8W
R433	1-205-991-11	METAL	0.1	10%	
R434	1-259-454-11	CARBON	12K	5%	1/6W
R435	1-259-458-11	CARBON	18K	5%	1/6W
R436	1-216-049-00	RES-CHIP	1K	5%	1/10W
R437	1-216-049-00	RES-CHIP	1K	5%	1/10W
R438	1-216-073-00	METAL CHIP	10K	5%	1/10W
R439	1-216-113-00	METAL CHIP	470K	5%	1/10W
R440	1-249-883-11	CARBON	22	5%	1/4W
R441	1-216-097-00	RES-CHIP	100K	5%	1/10W
R442	1-216-097-00	RES-CHIP	100K	5%	1/10W
R443	1-208-291-11	RES-CHIP	4.7M	5%	1/10W
R444	1-216-471-11	METAL OXIDE	27	5%	3W
R447	1-249-883-11	CARBON	22	5%	1/4W
R451	1-216-081-00	METAL CHIP	22K	5%	1/10W
R452	1-216-035-00	METAL CHIP	270	5%	1/10W
R453	1-216-073-00	METAL CHIP	10K	5%	1/10W
R454	1-216-073-00	METAL CHIP	10K	5%	1/10W
R501	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R502	1-216-073-00	METAL CHIP	10K	5%	1/10W
R503	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R504	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R505	1-216-073-00	METAL CHIP	10K	5%	1/10W
R506	1-216-073-00	METAL CHIP	10K	5%	1/10W
R507	1-216-073-00	METAL CHIP	10K	5%	1/10W
R508	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R509	1-216-102-00	RES-CHIP	160K	5%	1/10W
R510	1-216-102-00	RES-CHIP	160K	5%	1/10W
R511	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R512	1-216-073-00	METAL CHIP	10K	5%	1/10W
R901	1-216-073-00	METAL CHIP	10K	5%	1/10W
R902	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R903	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R904	1-216-037-00	METAL CHIP	330	5%	1/10W
R905	1-216-202-00	RES-CHIP	1.5K	5%	1/8W
R906	1-216-202-00	RES-CHIP	1.5K	5%	1/8W
R907	1-216-103-00	METAL CHIP	180K	5%	1/10W
R909	1-216-079-00	METAL CHIP	18K	5%	1/10W
R910	1-216-081-00	METAL CHIP	22K	5%	1/10W
R911	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R912	1-216-073-00	METAL CHIP	10K	5%	1/10W
R913	1-216-121-00	RES-CHIP	1M	5%	1/10W
R914	1-216-073-00	METAL CHIP	10K	5%	1/10W
R915	1-216-093-00	RES-CHIP	68K	5%	1/10W
R916	1-216-033-00	METAL CHIP	220	5%	1/10W
R917	1-216-061-00	METAL CHIP	3.3K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R918	1-216-089-00	RES-CHIP	47K	5%	1/10W
R919	1-216-073-00	METAL CHIP	10K	5%	1/10W
R920	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R921	1-216-073-00	METAL CHIP	10K	5%	1/10W
R922	1-216-073-00	METAL CHIP	10K	5%	1/10W
R923	1-216-073-00	METAL CHIP	10K	5%	1/10W
R924	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R925	1-216-073-00	METAL CHIP	10K	5%	1/10W
R926	1-216-073-00	METAL CHIP	10K	5%	1/10W
R930	1-216-073-00	METAL CHIP	10K	5%	1/10W
R938	1-216-073-00	METAL CHIP	10K	5%	1/10W
R939	1-216-073-00	METAL CHIP	10K	5%	1/10W
R940	1-216-238-00	RES-CHIP	47K	5%	1/8W
R941	1-216-190-00	RES-CHIP	470	5%	1/8W
R943	1-216-166-00	RES-CHIP	47	5%	1/8W
R944	1-216-166-00	RES-CHIP	47	5%	1/8W
R945	1-216-150-00	RES-CHIP	10	5%	1/8W
R946	1-216-150-00	RES-CHIP	10	5%	1/8W
R947	1-216-049-00	RES-CHIP	1K	5%	1/10W
R948	1-216-049-00	RES-CHIP	1K	5%	1/10W
R949	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R950	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R951	1-259-436-11	CARBON	2.2K	5%	1/6W
R952	1-216-049-00	RES-CHIP	1K	5%	1/10W
R953	1-216-073-00	METAL CHIP	10K	5%	1/10W
R954	1-216-085-00	METAL CHIP	33K	5%	1/10W
R955	1-216-096-00	RES-CHIP	91K	5%	1/10W
R956	1-216-121-00	RES-CHIP	1M	5%	1/10W
R957	1-216-049-00	RES-CHIP	1K	5%	1/10W
R958	1-216-049-00	RES-CHIP	1K	5%	1/10W
R959	1-216-049-00	RES-CHIP	1K	5%	1/10W
R960	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R961	1-216-121-00	RES-CHIP	1M	5%	1/10W
R962	1-216-121-00	RES-CHIP	1M	5%	1/10W
R963	1-216-073-00	METAL CHIP	10K	5%	1/10W
R964	1-216-073-00	METAL CHIP	10K	5%	1/10W
R965	1-216-073-00	METAL CHIP	10K	5%	1/10W
R966	1-216-073-00	METAL CHIP	10K	5%	1/10W
R967	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R971	1-216-093-00	RES-CHIP	68K	5%	1/10W
R972	1-216-089-00	RES-CHIP	47K	5%	1/10W
R973	1-216-190-00	RES-CHIP	470	5%	1/8W
		< VARIABLE RESISTOR >			
RV101	1-225-647-11	RES, VAR 20K/20K/20K/20K			
RV102	1-225-648-11	RES, VAR 5K/5K			
RV301	1-225-647-11	RES, VAR 20K/20K/20K/20K			
RV302	1-225-648-11	RES, VAR 5K/5K			
		< SWITCH >			
S101	1-572-185-11	SWITCH, SLIDE (FILTER)			
S301	1-572-185-11	SWITCH, SLIDE (FILTER)			
S501	1-771-802-11	SWITCH (TEST TONE)			
		< TRANSFORMER >			
* T901	1-435-418-11	TRANSFORMER, DC-DC CONVERTER			

Ref. No.	Part No.	Description	Remark
		< THERMISTOR >	
TH901	1-810-506-21	THERMISTOR NTH5G39B223K01TE	
TH902	1-809-664-51	THERMISTOR, POSITIVE	
TH903	1-809-664-51	THERMISTOR, POSITIVE	
**********		**********	
		MISCELLANEOUS	
		**********	
D905	8-719-079-03	DIODE LTL-30EFJ	
D906	8-719-079-03	DIODE LTL-30EFJ	
D907	8-719-079-03	DIODE LTL-30EFJ	
D910	8-719-912-51	DIODE ESAC25-02C	
D911	8-719-918-73	DIODE ESAC25-02N	
F901	1-532-947-11	FUSE (BLADE TYPE) (AUTO FUSE)	
Q110	8-729-052-06	TRANSISTOR KTD718	
Q111	8-729-052-05	TRANSISTOR KTB688	
Q210	8-729-052-06	TRANSISTOR KTD718	
Q211	8-729-052-05	TRANSISTOR KTB688	
Q310	8-729-052-06	TRANSISTOR KTD718	
Q311	8-729-052-05	TRANSISTOR KTB688	
Q410	8-729-052-06	TRANSISTOR KTD718	
Q411	8-729-052-05	TRANSISTOR KTB688	
Q917	8-729-052-00	TRANSISTOR SKP65N06	
Q918	8-729-052-00	TRANSISTOR SKP65N06	
TH902	1-809-664-51	THERMISTOR, POSITIVE	
TH903	1-809-664-51	THERMISTOR, POSITIVE	
**********		**********	
		ACCESSORIES & PACKING MATERIALS	
		**********	
	3-045-623-01	COVER (for POWER TERMINAL)	
	3-045-652-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH)(440EX:CND, AEP/440NX:UK)	
	3-045-652-21	MANUAL, INSTRUCTION (GERMAN,RUSSIAN)(440EX: AEP,G)	
	3-045-652-31	MANUAL, INSTRUCTION (SPANISH,PORTUGUESE)(440EX: AEP)	
	3-045-652-41	MANUAL, INSTRUCTION (DUTCH,SWEDISH)(440EX: AEP)	
	3-045-652-51	MANUAL, INSTRUCTION (ITALIAN,GREEK)(440EX: AEP)	
	3-045-652-61	MANUAL, INSTRUCTION (ENGLISH,SPANISH,CHINESE)(440EX: E)	
	3-367-410-01	SCREW (DIA. 5X15), TAPPING	
**********		**********	
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-543-21	SCREW +BTP 3X4 TYPE 2	
#2	7-685-545-11	SCREW +BTP 3X6 TYPE 2 N-S	
#3	7-685-546-19	SCREW +BTP 3X8 TYPE 2 N-S	
#4	7-682-949-01	SCREW +PSW 3X10	
#5	7-682-949-01	SCREW +PSW 3X10	

9-870-068-11

Sony Corporation
Mobile Electronics Division Company

2000A090267-1
Printed in Japan © 2000. 1
Published by General Engineering Dept.